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Screening of Nursing Students for Their Awareness & Attitude Towards Infectious Diseases & Occupation Hazards

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ABSTRACT

Occupationally acquired infections represent an important health issue and exposure to infectious material poses a serious risk to healthcare workers in health care settings. This study was undertaken to screen nursing students regarding their awareness, attitude & behavior towards infectious diseases and occupational hazards and to give recommendations regarding interventions to prevent occupationally acquired infections. A cross-sectional survey was conducted using self-administered questionnaire to a total of 200 nursing students as study population. We found that their awareness about epidemiological characteristics of Infectious diseases & occupational hazards was insufficient. The recommendations to prevent occupational exposure to such infections by the results of this study are continuous education, training about infection control & safe work practices, implementing Standard precautions, Transmission based precautions, PPE, improved availability of resources and immunization against Hepatitis B and other vaccine- preventable diseases.

INTRODUCTION

Health care workers including nursing students may be exposed to risk of Occupationally acquired infections like COVID-19, blood-borne infections such as HIV, HBV, HCV and to other communicable diseases & occupation hazards. More than 15 airborne infections have been transmitted to health care workers including tuberculosis, varicella, measles, influenza, and respiratory syncytial virus infection. Outbreak-associated attack rates range from 15% to 40%. Most occupational transmission is associated with violation of one or more of the basic principles of infection control: handwashing, vaccination of HCWs, and prompt placement of infectious patients into appropriate isolation [1]. The WHO estimates mortality among health care workers due to COVID-19 in top ranking countries for the disease between January 2020 to May 2021 to be 6683 according to WHO COVID-19 surveillance data ,115500 deaths based on population –based estimate method and 80,000 to 160000 deaths using meta-analysis based on PCR testing [1]. Exposures in blood-borne infections occur through needle sticks or cuts from other sharp instruments contaminated with an infected patient's blood or through contact of the eye, nose, and mouth with a patient's blood [2]. The WHO estimates the global burden of disease from occupational exposure to be 40% of the hepatitis B and C infections and 2.5% of the HIV infections among Health Care Workers (HCWs) as attributable to exposures at work [3]. The risk of infection of exposed person (from single needle stick injury-contaminated needle) is estimated to range between 10-30% for HBV [4] 1.8-10% for HCV [5] and 0.3% for HIV [6]. Standard precautions have been widely promoted in developed countries to protect HCWs from occupational exposure to blood and consequent risk of infection with blood-borne pathogens [7]. In developing countries standard precautions are often practiced partially if at all, there by exposing HCWs to risk of blood-borne infections [8]. Avoiding contact with potentially infected blood, body fluids and tissues & hand hygiene is an essential component of risk reduction for HCWs [9]. Preventing needle stick injuries and other potential exposures is likely to have significant impact on reducing infection in most health-care settings [10]. A number of strategies can be implemented to avoid the disease burden associated with Needle stick injuries, including vaccination against HBV, post-exposure prophylaxis, reducing the number of injections and invasive procedures where appropriate, using safer devices and properly disposing of needles and other sharps [11]. Access to personal protective equipment, such as gloves, masks gowns etc. and hand washing are basic methods of protection

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against many infectious diseases, and the described negligence in this area remind us of the constant need for training [12]. In our study we would like to draw attention to such negative behaviorsas removing protective gloves while doing work at the patient, recapping of used needles. The aim of this study is to investigate awareness of nursing students towards communicable diseases, occupational hazards and give recommendations regardingtheir health and interventions to promote Occupational safety.

MATERIALS AND METHODS

Study design: A cross-sectional study was carried out from October to November 2021 to assess the awareness and attitude of nursing students towards infectious diseases and occupational hazards.

Study population: Nursing students of Government College of Nursing, MGM Hospital who were attending clinical postings were selected as study population by Random sampling method. A self-administered, voluntary and anonymous questionnaire was answered by 200 nursing students. Questions covered the following categories; demographic characteristics like age, gender and work experience **(Table 1**).

Table 1. Demographic characteristics of nursing students.

Demographic characteristics	Number\value
Mean age	20 years
Gender	Female
Mean Work experience	2 years

Awareness about epidemiological characteristics of communicable diseases & modes of transmission of infectious diseases, attitude and practice towards exposure to blood and other infectious materials; vaccination status against communicable diseases, ability to work comfortably during their menstrual periods.

RESULTS

A total of 200 nursing students filled the questionnaire 18% of the nursingstudents had needle stick injury & exposure to body fluids, but did not report it to their supervisor. Their awareness of communicable diseases, infection prevention and control measures were found insufficient (**Table 2**).

Most (73%) of them were not vaccinated against infectious diseases like Hepatitis B. However, 98% of them were vaccinated for COVID-19 two doses. Only 34% of the nursing students were trained in Infection Prevention and Control (**Figure 1**).

Table 2. Distribution of responses provided by nursing students during assessmentoftheir awareness.

Questions related to	Correct responses	Incorrect responses
Awareness of communicable diseases	124 (62%)	76(38%)
Modes of transmission of infectious diseases	76	(38%)
Recapping of needle	28	(14%)
Appropriate use of gloves & PPE	56	(28%)
Hand hygiene	92	(46%)
Disposal of sharps	120	(60%)

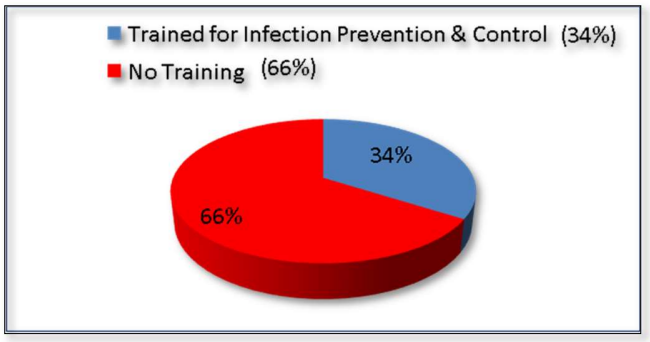

Figure 1. Percentage of nursing students trained in Infection Prevention & Control.

Needle stick injury: Needle recapping was done by 86% of them. 18% of them had needle stick injury due to improper handling of used needles, lack of attention & workload. There was underreporting of needle stick injuries. This implies the need for education, monitoring, improved availability of resources & disciplinary measures for poor compliance to infection control measures is necessary to prevent occupational hazards. 67% of them felt uncomfortable with dysmenorrhea, menorrhagia & stressed to work during their monthly menstrual periods whereas 33% of them were able to work comfortably.

Awareness and Attitude: Their awareness about epidemiological characteristics of infectious diseases is inadequate. Most of them presented with negative attitude

like needle recapping. Awareness of nursing students who scored 40 -60 % correct response in the questionnaire was graded as fair, correct response score of less than 40% was graded as poor and correct response score of more than 60% was graded as good. We rated their level of awareness based on their responses as poor for 64%, fair for 30%, good for 6% of them (**Figure 2**).

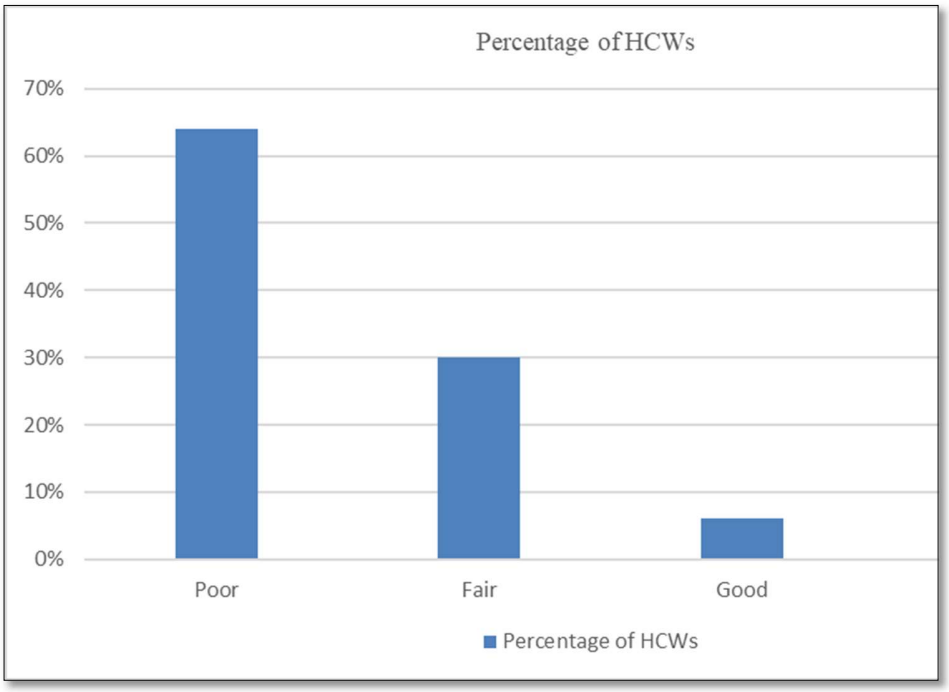

Figure 2. Diagrammatic representation showing Awareness & Attitude of nursing students towards Occupationally acquired infections.

DISCUSSION

Health care workers perform a wide range of activities in varying environments and are at common risk of occupational exposure to blood and other potential infectious material. The risk of acquiring infectious diseases through occupational exposure depends on number of exposures or needle stick injuries, prevalence of infectious disease in patient population.

The challenges faced in preventing these infections include:

Limited knowledge on transmission of infections in workplace, common unsafe practices, lack of standardized procedures, inadequate supplies and use of PPE, lack of regulations and policy to protect HCWs from exposure. It should be noted that nurses are the most numerous professional groups among heath care workers, they implement most treatments and usually have direct contact with patients. Most of the events related to needle stick injury similar to our and other studies [13-17] concerned nurses. In our study awareness of nursing students towards infectious diseases can be considered insufficient. Several studies [18-21] assessed the risk of occupational exposure to infectious diseases, including compliance with preventive measures, among various occupational groups and settings. Nurses and operating room personnel remain among the highest risk groups for bloodborne pathogen exposure. These studies were remarkably similar in confirming past studies, which documented that exposure events are greatly underreported, and that most of these events are deemed preventable. Persistent high-risk practices, such as recapping needles [22-24] point to the need for the engineering of safer equipment, which as far as possible removes the need for workers to modify ingrained behaviors. Few studies [25] were, however, able to document that intensive safety training and policies have some effect in reducing risk.

IMPLICATIONS

Health care workers can have significant morbidity and mortality with occupationally acquired infections especially COVID-19, TB, blood-borne infections etc. highlighting need for continued Infection prevent and control in health care settings. Preventive strategies are cost-effective and compliance with standard guidelines can significantly reduce morbidity and mortality in health care workers.

CONCLUSION

Our findings highlight that Induction training should be given to the nursing students at the time of admission itself & orientation program should be conducted to promote their awareness and occupational safety. There should be

emphasis in the trainings of HCWs on perfecting practical skills like paying more attention while handling needles and sharps, Safe work practices, Standard precautions, transmission-based precautions, Hand hygiene, PPE, safe injection practices. It is also recommended to promote vaccination against Hepatitis B and other vaccine-preventable diseases. We also recommend sanction of two days special leave to nursing students during first two days of their monthly menstrual cycle.

LIMITATIONS

Due to the limited number of surveys, we have obtained and including only single group of health care workers as study population, we cannot generalize results for the whole country, and the entire population of hospital HCWs. Also, the measure of awareness may be imprecise due to the small number of questions in the test.

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